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Risk, Efficiency and Return of PSBs in India

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Risk, Efficiency and Return of PSBs in India

Dr. Gian Kaur [α] & Pardeep Kaur [σ]

Abstract - The present study is an attempt to evaluate the performance of public sector banks in terms of credit risk, efficiency and their impact on the profitability of these banks. The study covered the period from 2000 to 2010. With the help of panel data regression analysis the study concludes that NPLs affect adversely the profitability of banks while risk aversion seems to be in favor of the public sector banks in India. Though significant progress has been made in NPLs management, much still need to be done in order to improve the performance of scheduled commercial banks. Keeping in view the gravity of credit risk, the study recommends steps, towards the recovery of such loans, to be undertaken and enforced by the RBI.

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I. Introduction

Major challenges for Asian banks include macroeconomic stability in a number of countries continued NPLs problems, lack of resilience at the bank level, increasing foreign competitors and demographic shifts which could lead consumers away from traditional deposits. (Deborah scholar, Vice-President of Moody's Financial institute and Sovereign Risk Group,2005).

Financial stability paves the way for sustained and rapid economic growth. Among various indicators of financial stability, bank's non-performing loans (NPLs) assume critical Importance as they reflect the bank's assets quality, credit risk and efficiency in the allocation of their resources for productive purpose. The NPL is defined as past due concept, taking into account either non-payment of interest due, principal or both.

The recent global financial crisis surfaced in second half of 2007 and in September, 2008 , America's one of the biggest investment bank-Lehman Brothers collapsed and triggered a chain reaction of economic, financial and psychological crisis engulfing the entire globe.

The Global Financial Stability Report in September 2011 has cautioned that for the first time since October 2008, the risks to global financial stability have increased, signaling a partial reversal in the progress made over the past three years. Banking systems in advanced economies have continued to be on uncertain grounds on account of a lack luster economic revival and increasing sovereign credit strains. The US banking system improved in terms of credit growth and profitability in 2010 and now the question of sustenance of the same (see Table 4). The banking system in the Euro Zone, as a whole, stands vulnerable to mounting credit, market and funding risks as a result of severe deterioration in public finances in certain European countries. Many of these banks require recapitalization to cushion them from the risk of sovereign defaults. The UK banking system too continues to be beleaguered by high leverage and weak asset quality. In major emerging economies, credit growth has been at relatively high levels and being regarded as a cause of concern given the growing inflationary pressures and increasing capital inflows (e.g CD ratio has increased consistently from 48.36 in 2000 to 73.16 in 2010). Further, concerns are also being expressed about the credit growth laying foundations for a weak asset quality in the years to come. On the positive side, both advanced and emerging economies, individually, and multi-laterally, have moved forward towards strengthening macro-prudential oversight of their banking systems. While it is important to keep up efforts towards strengthening the banking systems from within, it is also equally important to develop effective solutions for containing fiscal and economic risks, which at the present juncture threaten the stability of the global banking system from without. All such solutions need to be designed keeping in mind the larger interests of the global economy (Report on Trend and Progress of Banking in India, 2010-11, Global Banking Developments, and Chapter II).

The Indian financial sector continues to be sound and resilient. Banks remain well capitalized and are not excessively leveraged. The Reserve Bank remains vigilant in respect of the underlying trends in asset quality, as well as exuberant credit growth in select sectors and is working on a forward looking provisioning framework (Financial Stability Report, 2011, RBI Monthly Bulletin, December22, 2011)

In 2009, Financial Stability Development Council (FSDC) was formulated to watch financial stability of the Indian economy. The first Financial Stability Report (FSR) was published in March 2010, to focus on renewing the nature, magnitude and implication of risks that have bearing on the macro-economic environment, financial institutions, markets and infrastructure. The fourth FSR published in December 2011, has revealed that the Indian financial system remains stable. Subsequently a Systemic Risk Survey has been instituted during 2011 to review financial system of the economy.

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II. Objectives

The study spans over the period 2000-2010 viz. inclusive of the years (2008-2010) of Global Financial Crisis. The empirical analysis endeavors to capture the impact of the crisis on the Indian state owned banks-the PSBs. The overall objective of the study is to examine the impact of various indicators of banking sector reforms viz. NPAs, CAR and indicators of banking business viz. spread, business per employee and operating expenses.

The study is organized into five sections. Section I deals with a brief overview of the commercial banks in India during the period under study. Section II provides the brief overview of the literature related with the determinants of profitability of banks at national as well as international levels. Section III deals with scope, database and methodology used for the study. Section VI presents trends of the NPLs at the global level, in particular for Asia and Specifically for India. Section V gives the specification of the model to be evaluated along with the analysis of the results.

a) Overview of the Indian Banking Sector

Commercial banking constitutes the largest segment of the Indian financial system. It consists of state owned or public sector banks, private banks under Indian ownership and foreign banks. Among these banks, 27 PSBs dominate the commercial banking sector, accounting for more than 90 percent of the banking business in India.

Until the beginning of the 1990s, several quantitative and functional restrictions are operative. The banking sector was characterized by administered interest rates and large pre-emption of funds in the form of required reserves and directed credit. During 1991, the CRR of commercial banks was at statutory maximum of 15 percent of total of demand and time deposits, SLR to be invested in government and other approved securities were as high as 38.5 percent. This resulted total reserve requirement ratio as 53.5 percent. Under the "social objectives" of credit to the preferred sector, termed as "priority sector" banks were directed to lend 40 % of their net credit to this sector. Post nationalization period witnessed wide spread expansion of banking business in the country.

The initiation of banking sector reforms in the country during the early 1990s was conditioned by the analysis and recommendations of various committees. According to the RBIs Publication, at the end of March 2010, Indian banking sector consisted of 27 Public Sector Banks, 22 Private Sector Banks, 34 Foreign Banks, and 84 Regional Rural Banks. Therefore, Indian banking sector comprised 83 Scheduled commercial banks, made up of a total of 65412 branches and 941375 employees. The total assets of Indian banking sector has reached Rs. 6025141, with an average annual growth rate of 18.49 percent over the period from 2000 until 2010. The public sector banks continue to dominate the banking industry, in terms of lending and borrowing, and it has widely spread out branches, which help greatly in pooling up of resources as well as in revenue generation for credit creation. The profitability of Indian banks has been shown in following table.

Table 1 : Operating profits of Indian Commercial Bank (Amount in Rs. Cores)

Year	Public sector Banks	Private Sector Banks	Foreign Banks
2000-01	13792.95	2848.94	3105.15
2001-02	21676.54	4646.44	3513.61
2002-03	29715.24	7238.69	3727.85
2003-04	39290.10	8324.59	4985.53
2004-05	37413.18	7673.58	4597.44
2005-06	37967.21	9768.07	6658.44
2006-07	42268.18	13469.84	9599.81
2007-08	50307	18881.42	1404.7
2008-09	66972	24194.82	20098

Source : Report on Trend and Progress of Banking in India, Various Issues, RBI.

It has been observed from the table that private sector banks perform better in terms of operating profits than Sector banks.

b) Review of Related Literature

Heron, Sudan (2004) investigated the determinants of profitability of Islamic banks. The study found that internal factors such as liquidity, total expenditures, funds invested in Islamic securities and the percentage of the profit-sharing ratio between the bank and borrower are highly correlated. Further results shows that interest rates, market share and size of the also positively affect the profitability of banks.

Basher, M (2003) analyzed how bank characteristics and the overall financial environment affect the performance of Islamic banks. He utilized bank level data of Islamic banks across eight Middle Eastern countries between 1993 and 1998. The author used internal and external banking characteristics to predict profitability and efficiency. The results indicate that high capital-to-asset and loan-to-asset ratios lead to higher

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profitability. The results also indicate that foreign-owned banks are likely to be profitable. Everything remaining equal, the regression results show that implicit and explicit taxes affect the bank performance and profitability negatively while favorable macro-economic conditions impact performance measures positively.

Kosmidou et al. (2008) investigates the impact of bank-specific characteristics, macroeconomic conditions and financial market structure on UK owned commercial banks' profits, over the period 1995-2002. The findings depict that the capital strength of these banks has a positive and dominant influence on their profitability, the other significant factors being efficiency in expenses management and bank size. These bank-specific determinants are robust to the inclusion of additional macroeconomic and financial market measures of bank performance, which add little to the explanatory power but nevertheless appear to have positively influenced profitability.

Singh, R.K (2009) conducted a study to assess whether selected bank-specific and macro-economic determinants have significantly affected profitability of Indian banks. The study concluded that most of the selected indicators significantly impact banks in India and profitability of banks in India has risen significantly over the years and the selected macroeconomic determinants exert a significant impact on profitability of banks.

Flaming, Valentine et al. (2009) used a sample of 389 banks in 41 SSA (Sub-Saharan Africa) countries to study the determinants of bank profitability. They found that apart from credit risk, higher returns on assets are associated with larger bank size, activity diversification, and private ownership. Bank returns are affected by macroeconomic variables which suggest that macroeconomic policies that promote low inflation and stable output growth do boost credit expansion. Davydenko (2010) used a panel of individual banks' financial statements of Ukraine banks to study the impact of various factors on the profitability of Ukraine banks from 2005 to 2009. According to the empirical results, Ukrainian banks suffer from low quality of loans and do not manage to extract considerable profits from the growing volume of deposits. This study shows that the difference in profitability patterns of banks with foreign capital versus exclusively domestically owned banks. The results also indicate that there is room for consolidation of Ukrainian banks in order to benefit economies of scale.

Ramlall, Indranarain (2009) analyzed the determinants of profitability for the Taiwanese banking system and used bank-specific, industry-specific and macroeconomic factors, under a quarterly dataset, for the period 2002 to 2007. The study found that while credit risk triggers a negative impact on profitability, capital tends to consolidate profits. In general, results imply that Taiwanese banking system is well-diversified.

Bitola and Vera (2006) made an attempt to identify the key determinants of profitability of Public Sector Banks in India. This study is based on step-wise multivariate regression model used on temporal data from 1991-92 to 2003-04.The study concluded that the variables non-interest income, operating expenses, provision and contingencies and spread have significant relationship with net profits.

III. Data Base and Methodology

The study is based on panel data for 26 PSBs over the period 2000 to 2010. An advantage of using panel data is that more observations on the explanatory variables are available. This has the effect of helping to overcome the inherent multi co linearity, which probably exists between the independent variables in OLS estimation. The present study is based on secondary data and all the required data has been culled from Reserve Bank of India publications viz. Report on Trend and progress of Banking in India, Statistical Tables Relating to Banks in India and publications of Indian Banks Association. It is well known that commercial banks in India comprised public sector banks, private sector banks and foreign banks. As the number of private and foreign banks has changed over the time, the scope of the present study is limited only to public sector banks. The bank of Saurshatra and IDBI bank ltd. has been omitted from the study[3]. The period is selected according to the nature of subject and the availability of data. The variables selected for studying the impact on profitability are NPA, CAR, Spread, business per employee and operating expenses.

In panel regression model the cross section analysis provides meaningful analysis of interlink ages among economic and financial variables. The panel data (also called longitudinal data) refer to data for n different entities observed at n different time periods. Here the entities are 26 PSBs in India over the period 2000 to 2010 i.e T=11 and so there are (26×11=286) observations. PSBs-the entities are homogenous and non-variant in the specific time period. As the nature of the problem-the entities considered in this analysis are the state controlled banks and so are assumed to be structurally invariant. Pooling all the (26X11=286) observations, the following function for profitability of PSBs has been estimated:

$$Y_{it}=\alpha+\beta iX_{it}+\mu_{it}$$

Where Y=ROA- a measure of Profitability of banks
X's – Explanatory Variables (See Table.2)
Where i=1 to 26, t=1 to 11,

[3] IDBI ltd has started its operations after 2004 and Bank of Saurshatra closes its operations due to merger of SBS with its parent subsidiary. The inclusion of these banks made the data unbalanced.

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Table 2 : Description of variables used in the regression analysis

Variable	Description	Hypothesized relationship with profitability
OE	Operating expenses	-
SP	Spread	+
NPAs	Non-performing assets as a percent to net advances	–
BPE	Business per employee	+
CAR	Capital Adequacy Ratio	+

Following Panel Data Regression models with Fixed Effect Approach have been estimated.

1. Assuming that the intercept and slope coefficients are constant across time and space and the error term captures difference over time and entities.
2. The slope coefficients are constant, but the intercept varies over time
3. The intercept is constant, but the slope coefficient for a specific variable varies over time
4. The intercept and the slope coefficient for a specific variable vary over time

a) Pre-Emption of Funds

Indian banking industry bears a special feature in credit deployment to different sectors. (1) Banking sectors since independence (1947) to 1969, the year of nationalization of private banks viz.bringing these banks under state control, exhibited concentration of power. Since 1969 and then in 1980, India/RBI-the central bank of India has control over 26 banks – termed as public sector banks(PSBs). Since 1969, the norm of social control was established under which PSBs have been directed to load a specific proportion viz. 40 percent of their net bank credit to the priority sector (PS). This sector covers agriculture, small scale industries and other weaker sections of the society. Studies point out that adverse impact of this variable on the profitability of banks in India. It is due to the fact that (i) rate of interest On such loans is low and administered one and (ii) such loans are proving to more risk. Figures indicate that to total NPLs in India, the contribution of PS loans has increased consistently for the study period (2000-2001). It was 44.5 percent in 2000 and increased continuous to 63.6 percent in 2008, though it moderated slightly in the following years 2009(55.2 percent) and 2010(53.8 percent, Table 2).

As a policy variable to control credit RBI targets lending power of the commercial banks in terms of Required Reserves by fixing the ratios –(i) Cash –reserve ratio(CRR) –the minimum to be kept in the form of reserve against net deposits and (ii) statutory Liquidity Ratio (SLR) the minimum to be invested in government securities.

These ratios touched the maximum viz. 53.5 percent over and above 40 percent of PS lending. And so more than 90 percent of the lending capacity of the Indian banks was pre empted and the profitability of the banks dipped with, among other factors, due to pre-emption funds.

With introduction of banking sector reforms in 1991, these ratios (CRR and SLR) were aimed to be reduced to their minimum levels of (3 percent for CRR) and (25 percent for SLR). And so in a phased manner they have been reduced to about 5 percent (CRR) and to its minimum level of 25 percent of SLRTrends in NPA

Table 3 provides data on the non-performing assets (NPAs). The ratio of non-performing assets (NPAs) to total advances /assets highlights trends in quality of loan assets. A closer examination of the data indicates declining trend in NPAs as percentage to total assets in case of all bank groups. These trends are signs of improvement in the quality of loan assets and a decline in the credit risk exposure of banks at an aggregate level.

NPAs effect on profitability of banks is two pronged. These assets block the bank funds from putting in income earning assets on one hand and do not contribute to the returns of the banks(in terms of interest income earned) on the other hand. Expected sign of NPAs as determinant of profitability of banks, hence is negative.

Table 3 : Gross NPAs of Public Sector Banks in India

Year	NPL/Assets	NPL(PS) as % of total assets
2000	14	44.5
2001	12.4	.45.4
2002	11.1	46.2
2003	9.4	47.2
2004	7.8	47.5
2005	5.4	48.1
2006	3.9	54.1
2007	2.8	59.5
2008	2.3	63.6
2009	2.1	55.2
2010	2.3	53.8

Source : RBI, Report on Trend and Progress of Banking in India (Various Issues).

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All types of banks showed a declining trend in gross NPAs over the period under study but public sector bank has higher ratio as compared to private sector banks reason behind this is that PVT have a secured loan policy as compared to PSB. Even after implementation of prudential norms in early nineties and serious concern raised by govt. about growing size of NPAs, Public Sector Banks paid least attention to all these warnings, which subsequently led to turning fresh loans of banks into non-performing category. So, falling ratio of NPAs in terms of advances is not a true indicator of performance of PSBs in the field of NPAs. In fact, growing size of gross NPAs in absolute form has been real cause of worry. However; there is a silver lining, on account of the steps taken by the banks under the Securitization Act? The gross as well as net NPAs of Public and Private sector banks have started declining after 2002 this showed the reverse trend in contrast to the earlier years.

b) Cross-country trend of NPLs (Non-performing Loans)

According to the global NPL Report 2004, by Ernst and Young, the level of non-performing loan is estimated at about US$ 1.3 trillion during 2003 of which the Asian region accounts for about 77 percent of global NPLs. Within Asia, Japan and China account for 49 percent of the global NPL and about 85 percent Asian NPLs, while Taiwan, Thailand, Indonesian and Philippines together contribute about 5 percent of the global NPLs. India alone accounts for 2 percent of the global NPLs of the financial sector in the world.

Table 4 : Cross country Performance analysis of banks (NPL/Gross Loans) in percent

Country↓ →Year	2002	2006	2007	2008	2009	2011*
United States	1.4	0.8	1.4 (1.2)	2.9 (-0.1)	5.4 (-0.1)	3.8 (0.3)
United Kingdom	2.6	0.9	0.9 (0.4)	1.6 (-0.4)	3.5 (0.1)	3.5 (0.1)
France	4.2	3.0	2.7 (0.4)	2.8 (0.0)	3.6 (0.4)	-- --
Germany	5.0	3.4	2.6 (0.3) 0.3	2.8 (-0.1)	3.3 (0.2)	-- --
Portugal	--	1.3	1.5 (1.2)	2.0 (0.4)	3.2 (0.4)	6.9 (0.5)
Italy	6.5	4.9	4.6 (0.7)	4.9 (0.3)	7.0 (0.2)	11 (0.2)
Greece	--	5.4	4.5 (1.2)	5.0 (0.2)	7.7 (-0.1)	13.4 (-0.3)
Spain	--	0.7	0.9 (1.1)	3.4 (0.8)	5.1 (0.6)	5.3 (0.5)
Ireland	--	0.7	0.8	2.6	9.0	14.1
Brazil	4.5	3.5	3 (3.4)	3.1 (1.5)	4.2 (2.4)	3.4 (3.3)
Russia	5.6	2.4	2.5 (3.0)	3.8 (1.8)	9.7 (0.7)	7.2 (2.3)
India	10.4 (0.8)	3.3 (0.6)	2.5 (0.9)	2.3 (1.0)	2.3 (1.1)	2.2 (1.2)
China	26.0 (0.1)	7.1	6.2 (0.9)	2.4 (1.0)	1.6 (0.9)	1.1 (1.0)
Mexico	3.7	2.0	2.7 (2.3)	3.2 (1.4)	3.1 (1.5)	2.1 (1.6)
Indonesia	24.0	6.0	4.1	4.1	3.3	2.1
Malaysia	15.9	8.5	6.5 (1.5)	4.8 (1.5)	3.7 (1.2)	2.7 (1.8)
Philippins	26.5	7.5	5.8	4.5	4.1	2.9
Thaliand	15.7	8.1	7.9	5.7	5.3	---

Source : Report on Global Financial Stability, various issues, IMF

Note : --- indicates lack of statistical data, * indicates data for the period 2011 varies from Quarter to quarter. Figures in parenthesis indicates Return on assets or profitability of banks.

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However, the trend in the NPL ratios of selected countries has improved. In emerging countries like Thailand and Indonesia, structural reforms after the Asian crisis had an immediate impact on the financial sector inducing a sharp fall in NPLs. In Indonesia, the ratio of NPL to total loans declined from 24 percent in 2002 to 2.1 percent in 2011. For China, the figure stands at 26 percent as against that of 1.1 percent in 2011and India bears the respective figures as 10.4 and 2.2. Therefore, compared globally (see table 3), the performance of Indian banks are now approaching international standards and they are among the better performers in the emerging economics. The figures in the table further indicate the direct and inverse relationship between NPLs and return of the banking assets.

c) Ratio of Intermediation Cost or Operating Cost to Total Assets

Ratio of intermediation cost to total assets has experienced gradual fall in the post reform period for all bank groups except for foreign banks. This variable is one of the indicators of a measure of efficiency of banks. Among the components of operating expenses is the employee cost. The PSB's cost on wages declined following the voluntary retirement scheme in the past 2001 period. However, the most of banks towards information technology. Though adding to basket of operating cost is still a step for increasing efficiency of banks in India.

d) Spread

The variable spread (S), defined, as the excess of interest income over interest expenses is an important indicator of efficiency of banks. This ratio reflects the locative efficiency of banks, the smaller figure indicating higher efficiency. One of the objectives of banking sector reforms was to lower the interest rates. In the process, the lending rates have tended to be sticky as against the deposit rates. Over the time period the ratio of spread to total assets does not exhibit consistent trend. It may be because of the fact that banks have got freedom, in the post-reform regime, to determine the deposit rates as well as lending rates. Moreover the banks have diverted their investment portfolio to non-interest earning business/assets.

The variable spread(S) contributes to the profitability of banks. Hence the relationship between profitability of the banks and spread is hypothesized to be positive.

e) Capital Adequacy Requirements: (CAR)

Maintenance of sufficient capital as a percentage of risk weighted assets, termed as CRA is one of the requirements for banks under the norms of banking sector reforms.CRA can increase either by increases in capital or decrease in risk weighted assets. The latter can be decreased with investment in lesser risk assets so i.e. it is least when assets are totally free i.e. risk weight is zero. Greater the CAR indicates greater potential for investment in risk bearing assets, that yield more income (2.5 percent) than risk free assets like government securities in India. Hence impact of CAR on banks profitability is hypothesized as positive. Overall, the CAR of SCBs India has improved significantly from 10.4 percent in 1996-1997 to 12.2 percent during 2005-2006. For PSBs, the figures are 11.8 and 12.2 for the PSBs, the CAR has increase.

f) Findings

As discussed earlier, this study examines the impact of credit risk and efficiency on the profitability of Indian public sector banks. The results of the panel data regression model with time dummies and fixed effect models I to V am reported in Tables A-E.

i. *All Coefficients Constant Over Time*

By pooling the data on 26 entities over '11' years with 286 observations, the OLS results obtained are given in Table-5 and Table –6 as model -1 and model-2.

Model-1

$$Y_{it}=\alpha+\beta_1 BPE_{it}+\beta_2 NPA_{it}+\beta_3 SP_{it}+\beta_4 OE_{it}+\mu_{it}$$

Model-2

$$Y_{it}=\alpha+\beta_1 BPE_{it}+\beta_2 NPA_{it}+\beta_3 SP_{it}+\beta_4 OE_{it}+ CARit+\mu it$$

Examination of results for model-1 and model-2 indicate that all the slope coefficients are statistically significant with expected signs. Business Variables-BPE and SPE exert positive significant influence on the profitability of the banks, whereas the NPLs a measure of risk-put alarm for the banks as the variable bears negative sign and is highly, significant at 10% level of significance. The negative sign of OE (operating expenditure), too indicate heavy expenditure on the banks, contributing adversely to the profitability of the banks. The variable CAR (Variable of banking sector reforms as well as that of policy of the RBI), when added to the model-1, gives positive impact and estimation of model-2, indicates increase in R2. This shows that capital position has improved in case of Indian banks, compensating the adverse impact of NPAs on ROA. This may be the result of recapitalization of banks by the government since inception of banking sector reforms in 1991.

ii. Time Effect: Intercept varies and slope coefficient are invariant over time e.g Least Square Dummy Variable (LSDV) model

Following model has been estimated:

$$ROA_{it}=\alpha_1+\alpha_2 D_{i2}+\alpha_3 D_{i3}+\text{------}\alpha_{11} Di_{11}+\beta_1 BPE_{it}+\beta_2 NPA_{it}+\beta_3 SP_{it}+\beta_4 OE_{it}+ \beta_5 CARit+\mu it$$

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Where Di_2 =1 for the observation of year 2001
D_{i3} = 0 otherwise
= 1 for year 2002
= 0 otherwise
D_{i11} = 1 for 2010
=0 otherwise

The results are described of this model 3 in Table 7. The coefficients of all the variables bear expected signs with statistically significance as in model -1 and model-2. R2 increases, though slightly. The coefficient of CAR is maintained but not significant. As evident from the results, none of the time dummies turns out to be significant statistically. It may be inferred that the profitability function, as specified, has not changed much over the time under consideration.

iii. Intercept Constant but the slope coefficient of variable SP (spread-interest margin) varies over time.

To examine this possibility, the model is outlined as:

$$ROA_{it}=\alpha+\beta_1 BPE_{it}+\text{-------}\beta_5 CAR_{it}+\lambda_2 D_{t2}SP_{it}+\lambda_3 Dt3SPit\text{--------}+\lambda_{11}D_{11}SPit+\mu_{it}$$

Here Di_2 = 1 for the variable SP for 2001
= 0 otherwise
D_{i3} = 1 for SP for 2002
= otherwise
D_{i11} = 1 for SP for 2010
= 0 otherwise

Table 8 reproduces the estimates of the above equation. It is observed that time has not put any differential impact on this function. Over the period since reforms in the banking industry, the portfolio behavior of the banks has changed with diversification in its lending and investing policies .Income from non-interest assets has increased. However the value of R2 has increased as compared to the results with fixed effects in Tables 5 and 6 (from .6339 to .6491).Such exercise was also conducted with the other variables considered in the model, but the effect was negligible.

iv. Intercept and slope coefficient of SP varies over time

Following model has been estimated to meet the objective

$$ROA_{it} = \alpha_1+\alpha_2 Di_2+\text{--------}+\alpha i_{11}Di_{11}+\beta_1 BPEit+\text{-------}\beta_5 CAR_{it}+\lambda_2 D_{t2}SP_{it}+\lambda_3 Dt3SPit\text{--------}+\lambda_{11}D_{11}SPit+\mu_{it}$$

D_{i2} =1 for 2001
= 0 otherwise
D_{i11} =1 for 2010
=0 otherwise

Results of this model are produced in Table 9. As observed R2 has increased from 0.6491 (with slope dummies) and from 0.6339 (with intercept dummies) to 0.6543. However, the coefficients with differential coefficients are not significant.

Table : 5 (Model-1)

	Coefficient	Std. Error	t-ratio	p-value
Constant	0.645858	0.171111	3.7745	0.00020***
BPE	0.000786736	0.000318206	2.4724	0.01407**
NPA	-0.0742188	0.00998933	-7.4298	<0.00001***
SP	0.299006	0.0522344	5.7243	<0.00001***
OE	-0.223042	0.0631938	-3.5295	0.00049***
R-squared	0.629838			
Adjusted R-squared	0.587906			
Durbin-Watson	1.956952			

Note : ***, **,* denotes the level of significance at 1%, 5% and 10% respectively.

Table : 6 (Model-2)

Explanatory Variables	Coefficient	Std. Error	t-ratio	p-value
Constant	0.594013	0.17327	3.4283	0.00071***
BPE	0.000781423	0.000317092	2.4643	0.01439**
NPA	-0.0726944	0.00999509	-7.2730	<0.00001***

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SP	0.295177	0.0520988	5.6657	<0.00001***
OE	-0.222182	0.0629716	-3.5283	0.00050***
CAR	0.00456061	0.00271258	1.6813	0.093938
R-squared	0.633896			
Adjusted R-squared	0.590825			
Durbin-Watson	1.917549			

Note : ***, **,* denotes the level of significance at 1%, 5% and 10% respectively.

Table 7 : (Model 3)

	Coefficient	Std. Error	t-ratio	p-value
Constant	0.577734	0.184121	3.1378	0.00191***
BPE	0.00079358	0.000325073	2.4412	0.01535**
NPA	-0.0716457	0.0102538	-6.9872	<0.00001***
SP	0.296358	0.0532307	5.5674	<0.00001***
OE	-0.224275	0.0640208	-3.5032	0.00055***
CAR	0.00426848	0.00280748	1.5204	0.12970
Dt_2	0.0238977	0.0738895	0.3234	0.74665
Dt_3	-0.0212538	0.0740296	-0.2871	0.77428
Dt_4	0.0384069	0.0744328	0.5160	0.60632
Dt_5	0.0243112	0.0736787	0.3300	0.74171
Dt_6	0.00727716	0.0741539	0.0981	0.92190
Dt_7	-0.0275667	0.0738994	-0.3730	0.70945
Dt_8	-0.0198867	0.0737216	-0.2698	0.78758
Dt_9	0.0489137	0.0736818	0.6639	0.50741
Dt_10	0.034679	0.0742109	0.4673	0.64070
Dt_11	0.0606652	0.0739134	0.8208	0.41258
R-squared	0.638737			
Adjusted R-squared	0.579755			
Durbin-Watson	1.926033			

Note : ***, **,* denotes the level of significance at 1%, 5% and 10% respectively.

Table 8 : (Model 4)

	Coefficient	Std. Error	t-ratio	p-value
Constant	0.519035	0.183508	2.8284	0.00506***
BPE	0.000920301	0.000347044	2.6518	0.00853***
NPA	-0.072091	0.010068	-7.1604	<0.00001***
SP	0.228816	0.0934803	2.4477	0.01508**
OE	-0.196453	0.065468	-3.0007	0.00297***
Car	0.00423162	0.00270872	1.5622	0.11952
DS2	0.0401762	0.122923	0.3268	0.74407
DS3	0.0674525	0.110539	0.6102	0.54228
DS4	0.128407	0.11199	1.1466	0.25266
DS5	0.131728	0.108709	1.2117	0.22677
DS6	0.0293088	0.106701	0.2747	0.78379
DS7	-0.046102	0.107531	-0.4287	0.66849
DS8	0.014729	0.108408	0.1359	0.89204
DS9	0.140888	0.100175	1.4064	0.16086
DS10	0.0847627	0.0689462	1.2294	0.22010

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R-squared	0.649140			
Adjusted R-squared	0.593515			
Durbin-Watson	1.956471			

Note : ***, **,* denotes the level of significance at 1%, 5% and 10% respectively.

Table 9 : (Model 5)

	Coefficient	Std. Error	t-ratio	p-value
Constant	0.506674	0.195739	2.5885	0.01024**
BPE	0.00091133	0.000355586	2.5629	0.01100**
NPA	-0.0708054	0.0103329	-6.8524	<0.00001***
SP	0.217672	0.0955086	2.2791	0.02356**
OE	-0.201454	0.0666011	-3.0248	0.00276***
CAR	0.00386168	0.00280905	1.3747	0.17052
DS2	0.0639291	0.127825	0.5001	0.61745
DS3	0.0917677	0.113834	0.8062	0.42097
DS4	0.144014	0.114392	1.2589	0.20929
DS5	0.146597	0.111218	1.3181	0.18875
DS6	0.0390757	0.108948	0.3587	0.72017
DS7	-0.036749	0.110073	-0.3339	0.73878
DS8	0.0256683	0.110754	0.2318	0.81692
DS9	0.145768	0.101928	1.4301	0.15401
DS10	0.0888224	0.0703147	1.2632	0.20776
Dt_2	0.0294251	0.0741739	0.3967	0.69194
Dt_3	-0.0153676	0.0742978	-0.2068	0.83631
Dt_4	0.0519968	0.075154	0.6919	0.48970
Dt_5	0.0337804	0.0744439	0.4538	0.65041
Dt_6	0.0178665	0.07471	0.2391	0.81120
Dt_7	-0.0269238	0.074968	-0.3591	0.71981
Dt_8	-0.0168655	0.0741974	-0.2273	0.82038
Dt_9	0.0471006	0.0751675	0.6266	0.53152
Dt_10	0.04142	0.0743853	0.5568	0.57817
Dt_11	0.0660435	0.0742906	0.8890	0.37491
R-squared	0.654339			
Adjusted R-squared	0.582570			
Durbin-Watson	1.967788			

Note : ***, **,* denotes the level of significance at 1%, 5% and 10% respectively. DS11 is omitted due to coli neatly.

IV. Conclusion and Suggestion

Empirical results relating to ROAs of PSBs in India as determined by different bank variables for the period 2000-2010 highlights that:

1. Effect of the policy variables and bank business have put significant impact on ROA, but
2. Over the time, the banks 'performance has not been affected by other structural variations in the economy-political, technological or global upheavals etc. It indicates that Indian banking industry is resilient to economic and other shocks.

Burden of NPLs on the financial institutions has become a global phenomenon and so for Indian Banking Industry. Though the NPLs as share of total bank loans have decreased since inception of Banking Sector Reforms (cross country comparison in this context is in favor of India), the empirical results above alarms for the negative impact of this variable on ROA. The findings of this study suggest that NPLS, may be targeted seriously by the monetary policy. More vigilant and strict policy towards recovery of bad loans is demanded from the government and RBI.

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